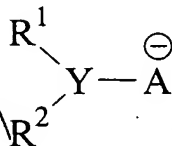


WHAT IS CLAIMED IS:

1

1. A ligand having the formula:



2

where

3

A is CH₂, CHR³, CR³R⁴, NR³, O, S, or PR³;

4

R¹ and R² are independently hydrogen, aryl, C₆₋₁₅

5

diarylphospho, C₁₋₁₈ alkylthio, C₆₋₁₅ arylthio, C₇₋₁₅ aralkyl, C₁₋

6

₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅

7

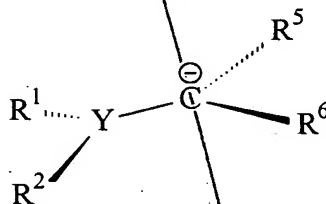
diarylamino; and

8

Y is B, Al, or Ga.

1

2. The ligand of claim 1 having the formula:



2

where

3

R⁵ and R⁶ are independently hydrogen, C₁₋₈ alkyl, C₆₋₁₀ aryl,

4

C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino,

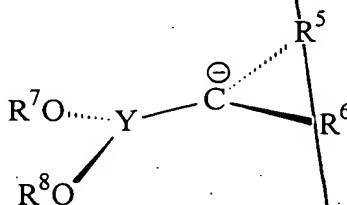
5

or C₆₋₁₅ diarylamino.

1

3. The ligand of claim 1 having the formula:

2



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3

where

4

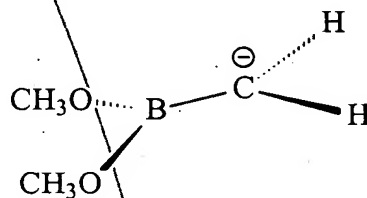
R^7 and R^8 are independently C_{1-8} alkyl, C_{6-10} aryl, or C_{7-15}

5

aralkyl.

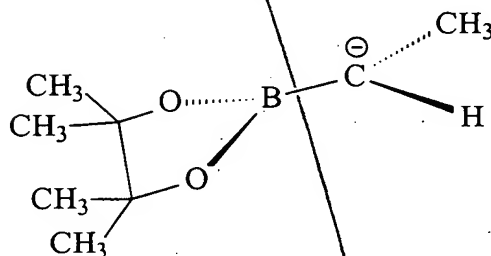
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4. The ligand of claim 3 having the formula:



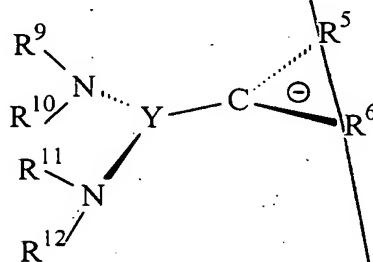
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5. The ligand of claim 3 having the formula:



1

6. The ligand of claim 2 having the formula:



2

where

3

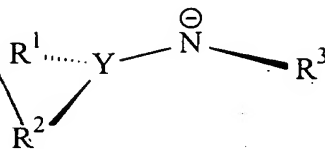
R^9 , R^{10} , R^{11} , and R^{12} are independently C_{1-8} alkyl, C_{6-10} aryl,

4

or C_{7-15} aralkyl.

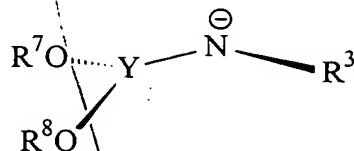
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7. The ligand of claim 1 having the formula:



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8. The ligand of claim 7 having the formula:



2

where

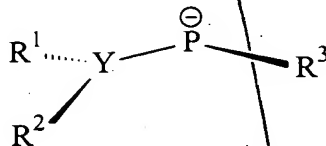
3

R^7 and R^8 are independently C_{1-8} alkyl, C_{6-10} aryl, or C_{7-15} aralkyl.

4

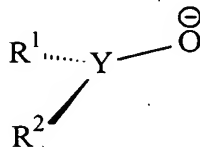
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9. The ligand of claim 1 having the formula:



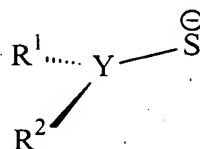
1

10. The ligand of claim 1 having the formula:

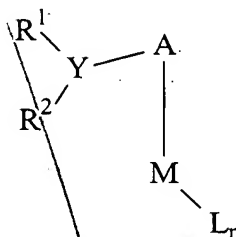


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11. The ligand of claim 1 having the formula:



12. A polymerization catalyst containing a ligand of claim 1, and having the formula:



where

M is a transition metal;

L is a sigma bonded or pi bonded ligand;

n is an integer such that the valency of M is satisfied;

A is CH₂, CHR³, CR³R⁴, NR³, O, S, and PR³;

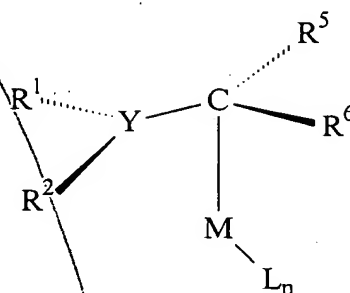
R¹ and R² are independently hydrogen, aryl, C₆₋₁₅ diarylphospho, C₁₋₁₈ alkylthio, C₆₋₁₅ arylthio, C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅ diarylamino;

R³ and R⁴ are independently hydrogen, C₁₋₈ alkyl, C₆₋₁₀ aryl, C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅ diarylamino; and

Y is B, Al, or Ga.

1

13. The polymerization catalyst of claim 12 having the formula:



2

where:

3

4

5

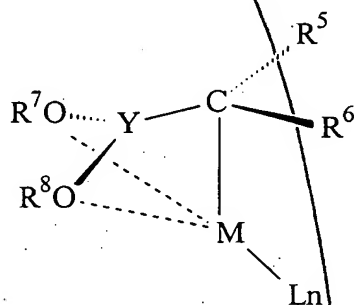
6

R^5 and R^6 are independently hydrogen, a C_{1-8} alkyl group, C_{6-10} aryl group, C_{7-15} aralkyl group, C_{1-10} alkoxy group, C_{6-14} aryloxy group, C_{1-10} dialkylamino group, or C_{6-15} diarylamino group.

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14. The polymerization catalyst of claim 12 having the formula:

2



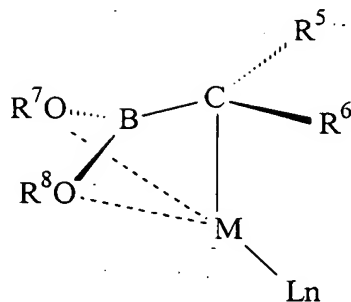
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4

where R^7 and R^8 is hydrogen, a C_{1-8} alkyl group, C_{6-10} aryl group, or C_{7-15} aralkyl group.

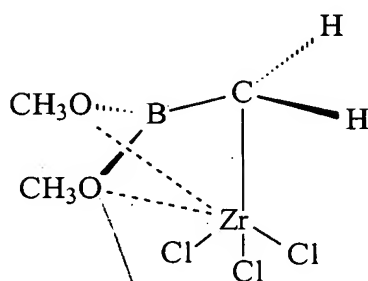
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15. The catalyst of claim 12 having the formula:



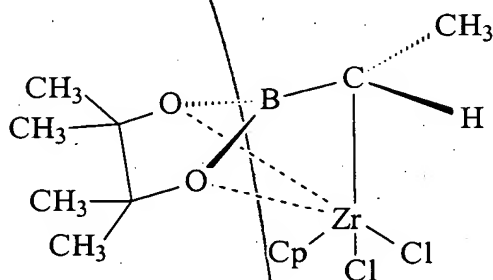
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16. The catalyst of claim 12 having the formula:



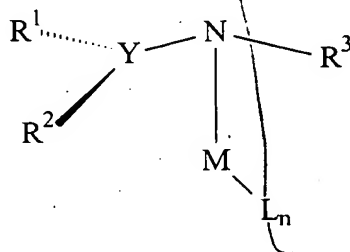
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17. The catalyst of claim 12 having the structure:



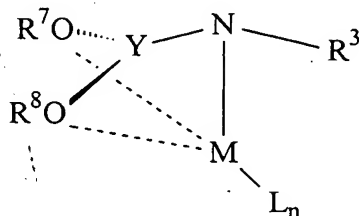
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18. The catalyst of claim 12 having the formula:



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19. The catalyst of claim 12 having the formula:



2

where

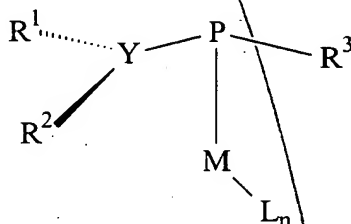
3

R^7 and R^8 are independently a C_{1-8} alkyl group, C_{6-10} aryl group, or C_{7-15} aralkyl group.

4

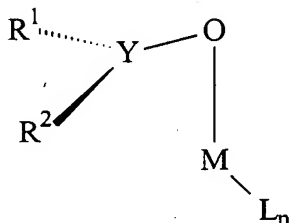
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20. The catalyst of claim 12 having the formula:

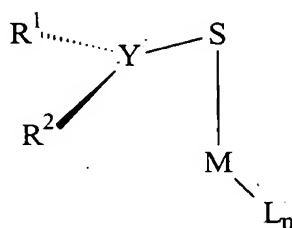


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21. The catalyst of claim 12 having the formula:



- 1 22. The catalyst of claim 12 having the formula:



- 1 23. A process for the oligomerization or polymerization of at least
 2 one α -olefin, said process comprising polymerizing said at least one α -olefin in the
 3 presence of a polymerization catalyst component comprising the polymerization
 4 catalyst of claim 12.

- 1 24. A polyolefin or oligoolefin prepared by the process of claim
 2 23.

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